

S/137/62/000/002/136/1  
A052/A101

AUTHORS: Blyum, I. A., Glazkova, A. F.

TITLE: The methods of determining selenium and tellurium in ores

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 2, 1962, 4, abstract 2K16  
(V sb. "Khim., fiz.-khim. i spektr. metody issled. rud redk. i rasseyan. elementov". Moscow, Gosgeoltekhizdat, 1961, 13-18)

TEXT: At a separated quantitative determination of Se and Fe the weighed portion of ore is decomposed with  $\text{HNO}_3$ . To oxidize S, KI is used. 5 - 6 ml of  $\text{HNO}_3$  is left, the volume is brought by adding water to 70-80 ml, hydrazine chloride is added and the whole is left overnight. The Se residue is filtered off, dissolved and the Se content is determined by the photolorimetric method. Fe is precipitated in the filtrate by Sn chloride, the residue is filtered off and the Fe content is determined by the photolorimetric method.

L. Vorob'yeva

[Abstracter's notes: 1) Complete translation.  
2) The paper is supposed to deal with the determination of tellurium (Te) but the reviewer is talking throughout about iron (Fe), which is probably a misprint.]

Card 1/1

S/032/61/027/004/001/028  
B110/B215

AUTHORS: Ivankova, A. I. and Blyum, I. A.

TITLE: Separation and determination of low amounts of selenium and tellurium

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 4, 1961, 371-377

TEXT: Traditional methods of precipitating selenium and tellurium with a content of 1 - 2 mg/l show no quantitative separations; deviations of 20 - 35% occur with concentrations of 0.2 - 0.5 mg/l. The sensitiveness of color reactions cannot be fully utilized. The authors used the following methods to determine Se and Te in copper-zinc and copper ores of the Urals up to a content of 0.0005 - 0.0006% (error limits 3 - 5%):  
The mineral (2 g) dissolved in 35 - 40 ml of  $\text{HNO}_3$  (1.40) was heated with 10 ml of  $\text{H}_2\text{SO}_4$  (1:1) until  $\text{SO}_3$  vapors were formed. 50 ml of  $\text{HCl}$  (1.19), 1 mg of dissolved arsenic (1 mg/ 1 ml), and 0.1 g of  $\text{CuSO}_4$  were added to the solution after filling up to 50 ml. An excess of  $\text{Na}_3\text{PO}_2$  was used for  
Card 1/9

✓

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

precipitating; the precipitate was dissolved in 5 ml of  $\text{HNO}_3$  and 2 - 3 drops of  $\text{HCl}$ , heated with 2 ml of  $\text{H}_2\text{SO}_4$  until  $\text{SO}_3$  vapors were formed, and then filled up to 10 ml. 3 ml each of this solution were used for the Se (I) and Te (II) analyses. 2 ml of 2.5 N  $\text{HCOOH}$  and 3 ml of 0.1 M Trilon B solution were added for (I). A pH of 2 - 3 was established with  $\text{NH}_3$  (1:1), and 2 ml of 0.5% 3,3'-diamino-benzidine solution were added. After extraction with 10 ml of toluene, a 20-mm layer of the solution was studied with an ФЭК-Н-57 (FEK-N-57) photo-colorimeter, light filter no. 2 ( $\lambda_{\text{max}} = 410 \text{ m}\mu$ ). The molar coefficient of light extinction in the passage range of filter no. 2 is 6300 referred to the Se content in aqueous solution before extraction. Cr, Sn, Ti, Zr, Au, and large amounts of Fe and Cu disturb the Se determination. For analysis (II), 5.8 ml of  $\text{H}_2\text{SO}_4$  (1:1), 0.6 ml of 3.5 N  $\text{HBr}$ , 0.6 ml of 0.1% butyl rhodamine B solution, and 0.05 g of ascorbic acid were added to 3 ml of solution. After extraction with 5 ml of benzene, the optical density of a 5-mm layer is determined either with an ФЭК-М (FEK-M) photo-

Card 2/9

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

colorimeter with liquid light filters, or ФЭК-Н-57 (FEK-N-57) photocolormeter with filter no. 5 ( $\lambda_{\text{max}} = 530 \text{ m}\mu$ ; molar coefficient of light extinction = 35,000). The following rhodamine dyestuffs may also be used for the Te determination: ethyl rhodamine B, rhodamine 6 G, and rhodamine B. In the latter, a mixture of benzene and ether (3:1) is used for the extraction. A fluorimeter consisting of an СВЛМ-250-3 (SVDSH-250-3) lamp, a monochromator, an ФЭУ-19 (FEU-19) photomultiplier, and an М-95 (M-95) microammeter, was used to measure the fluorescent intensity of Te compounds with rhodamines. The wavelength for rhodamine 6 G was 555  $\text{m}\mu$ , and for the other dyestuffs: 587  $\text{m}\mu$ . As the reference value = 100, a  $10^{-3}$  M fluorescein solution of  $\lambda = 518 \text{ m}\mu$  was used. Results are shown in Fig. 1 and Tables 2,3. Best results were obtained with the bromide complex and butyl rhodamine B; 0.01% of Te was still found in 5 ml. With a Te content of  $10^{-5}$  to  $10^{-6}$  %, however, the photometric method is to be preferred. D. P. Shcherbov and A. I. Ivankova are mentioned. There are 5 figures, 3 tables, and 13 references: 9 Soviet-bloc and 4 non-Soviet-bloc. The three references to English language publications read as follows: Ref. 9: D. Boltz, Colorimetric determina-

Card 3/9

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

tion of nonmetals, N.Y. (1958); Ref. 10: C. L. Luke, Anal. Chem., 31,  
no. 4, 572 (1959); Ref. 8: K. L. Cheng, Anal. Chem., 28, no. 11, 1738  
(1956).

ASSOCIATION: Kazakhskiy nauchno-issledovatel'skiy institut mineral'nogo  
syr'ya (Kazakh Scientific and Research Institute of Mineral  
Raw Materials)

Card 4/9

Separation and determination...

Legend to Fig. 1: Dependence of fluorescent intensity on the acid content in compounds of the tellurium chloride complex;  
 (a)  $H_2SO_4$  concentration, 2 equiv/l;  
 (b) fluorescent intensity; (1) with rhodamine B; (2) with ethyl rhodamine B; (3) with butyl rhodamine B; (4) with rhodamine 6 G (1°, 2°, 3°, 4°), corresponding blank tests; for all experiments:  $Te = 10\%$ , chlorine ion concentration = 0.5 N.

S/032/61/027/004/001/028  
 B110/B215

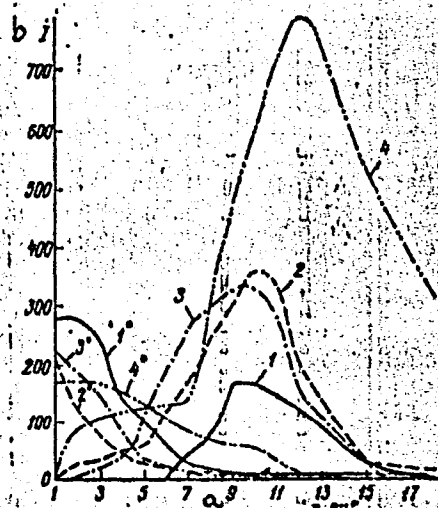


FIG. 1

Card 5/9

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

TABLE 2

Выделение малых количеств селена и теллура

①	②	③	④	⑤	⑥		⑦	
Осадитель	Коллектор	Доза элемента г	Количе- ство определя- ний	Найдено г (среднее)	Случайная погрешность		Систематическая погрешность	
					г	%	г	%
⑪ Селен								
⑧ Гипофосфит	⑬ Мышьяк	1,5	4	1,65	0,35	23	+0,15	+10
		3,0	10	3,0	0,6	20	0,0	0
		7,5	4	7,1	0,7	9	-0,4	-6
		15,0	11	14,3	1,0	7	-0,7	-5
⑨ Среднее		8,0	—	7,65	0,73	9	-0,35	-4
⑩ Титан (III)	⑫ Теллур	10,0	3	10,3	0,3	3	+0,3	+3
		20,0	4	21,2	1,8	9	+1,2	+6
		25,0	2	23,5	1,5	6	-1,5	-6
⑪ Среднее		20,0	—	20,3	1,2	6	+0,3	+1,5
⑫ Теллур								

Card 6/9

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

(8) Гипофосфат	(13) Мышьяк	1,5 3,0 7,5 15,0	4 8 2 7	1,3 2,6 7,1 14,4	0,2 0,8 0,4 1,3	13 20 5 9	-0,2 -0,4 -0,4 -0,6	-13 -13 -5 -4
(9) Среднее		7,15	—	6,7	1,1	15	-0,45	-6
(10) Титан (III)	(11) Селен	1 3 5 10	2 6 6 3	1,1 2,9 4,6 9,6	0,1 0,3 0,4 0,5	10 10 8 5	-0,1 -0,1 -0,4 -0,4	+10 -3 -5 -4
(9) Среднее		4,7	—	4,5	0,3	6,3	-0,2	-5

Legend to Table 2: Separation of low amounts of Se and Te; (1) precipitant; (2) collector; (3) present amounts of Se or Te,  $\gamma$ ; (4) number of analyses; (5) determined on average,  $\gamma$ ; (6) incidental error; (7) systematic error; (8) hypophosphite; (9) mean value; (10) titanium (III); (11) selenium; (12) tellurium; (13) arsenic.

Card 7/9



Separation and determination...

S/032/61/027/004/001/028  
B110/B215

TABLE 3 Результаты определения селена и теллура в рудах

① Установ- ленное содержание, %	② Осаждение гипофосфитом					③ Осаждение титаном (III)				
	④ количество анализов	⑤ среднее значение %	⑥ Отклонение от среднего значе- ния, %		⑧ отклонение от установленного содержания, %	④ количество анализов	⑤ среднее значение %	⑥ Отклонение от среднего значе- ния, %		⑧ отклонение от установленного содержания, %
			⑦ к максим.	⑦ к миним.				⑦ к максим.	⑦ к миним.	
⑩ Селен										
0,0005	4	0,00033	0,000025	8	-33	5	0,0004	0,00006	15	-20
0,0050	4	0,0018	0,00025	5	-4	5	0,0050	0,00060	12	0
0,0087	4	0,0085	0,00020	2,4	-2,4	5	0,0083	0,00014	1,7	-4,7
0,0020	4	0,0018	0,00007	4	-10	5	0,00185	0,00015	8	-7,5
0,0017	4	0,0016	0,00012	8	-6	5	0,0012	0,00012	10	-29
⑪ Сред- нее	0,0030	—	0,00013	4,6	-6,7	—	0,0028	0,00020	8	-6,7

Card 8/9

Separation and determination...

S/032/61/027/004/001/028  
B110/B215

(11) Телур											
0,0025	5	0,0024	0,00010	4	-4	5	0,0023	0,00014	6	-8	
0,0047	5	0,0030	0,00024	4,8	+6	5	0,0049	0,00030	6	+4	
0,0014	5	0,0013	0,00014	11	-7	5	0,0013	0,00012	9	-7	
0,0112	5	0,0112	0,00036	3	0	5	0,0108	0,00070	6,5	-3	
0,0005	5	0,00054	0,00005	9	+8	5	0,0005	0,00004	8	0	
0,0006	5	0,00062	0,00002	3	+3	5	0,0006	0,00000	0	0	
(12) Сред- нее											
0,0035	—	0,0035	0,00015	4,3	0	—	0,0034	0,00020	6	-3	

Legend to Table 3: Results of determination of Se and Te in ores;  
(1) determined content; (2) precipitation with hypophosphite;  
(3) precipitation with Ti (III); (4) number of analyses; (5) mean value,  
%; (6) deviation from mean value, %; (7) referred to the weighed sample;  
(8) referred to the content; (9) deviation from determined content, %;  
(10) selenium; (11) tellurium; (12) mean value.

Card 9/9

BLYUM, I.A.; DUSHINA, T.K.; SEMENOVA, T.V.; SHCHERBA, I.Ya

Determination of boron with crystal violet. Zav.lab. 27  
no.6:644-650 '61. (MIRA 14:6)

1. Kazakhskiy institut mineral'nogo syr'ya, TSentral'naya  
laboratoriya Chelyabinskogo geologicheskogo tresta i TSentral'naya  
laboratoriya Yuzhno-Kazakhstanskogo geologicheskogo upravleniya.  
(Boron--Analysis) (Crystal violet)

BLYUM, I.A.; SOLOV'YAN, I.T.; SHEBALKOVA, G.N.

Arylmethane dyes in inorganic analysis (determination of Sb, Ti,  
and In). Zav.lab. 27 no.8:950-956 '61. (MIRA 14:7)

1. Kazakhskiy institut mineral'nogo syr'ya i Tsentral'naya  
laboratoriya Yuzhno-Kazakhstanskogo geologicheskogo upravleniya.  
(Antimony--Analysis) (Titanium--Analysis) (Indium--Analysis)

S/032/62/028/008/001/014  
B142/B101

AUTHORS: Blyum, I. A., and Dushina, T. K.

TITLE: Rhenium determination by butyl rhodamine B in ores

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 8, 1962, 903-906

TEXT: Studies of reactions between rhenium and rhodamine dyes showed that the Re VII - butyl rhodamine compound is suited for the quantitative analysis of Re. To eliminate the disturbing effect of Hg, W, Mo,  $\text{NO}_3^-$  and halides the sample is annealed with MgO for two hours at 650-700°C in an oxidizing atmosphere, boiled with water, and filtered. The filtrate is mixed with phosphoric or sulfuric acid and 1 ml of a 0.1% dye solution, then extracted with 10 ml benzene. The optical density of the extract is colorimetrically determined and depends on the acid concentration. Extraction from a 5 N  $\text{H}_2\text{SO}_4$  or 3 M  $\text{H}_3\text{PO}_4$  solution is suited best. The extraction degrees of  $\text{H}_2\text{SO}_4$  and  $\text{H}_3\text{PO}_4$  are 70% and 96%, respectively.

During the analysis of sulfidic ores the optical density increases owing to the  $\text{SO}_4^{2-}$  content. With a weighed portion of 2g substance containing Card 1/2

Rhenium determination by ...

S/032/62/028/008/001/014  
B142/B101

50% S the optical density of the blank test increases by a value equivalent to 0.25-0.3  $\mu\text{g Re}$ . The method has therefore a sensitivity of 0.0002%. There are 3 figures and 2 tables.

ASSOCIATION: Kazakhskiy institut mineral'nogo syr'ya (Kazakh Institute of Mineral Raw Materials). Tsentral'naya laboratoriya Chelyabinskogo geologorazvedochnogo tresta (Central Laboratory of the Chelyabinsk Trust of Geological Exploration)

Card 2/2

BLYUM, I.A.; DUSHINA, T.K.

Determination of rhenium in ores with butylrhodamine B. Zav.lab.  
28 no.8:903-906 '62. (MIRA 15:11)

1. Kazakhskiy institut mineral'nogo syr'ya i Tsentral'naya  
laboratoriya Chelyabinskogo geologorazvedochnogo tresta.  
(Rhenium--Analysis) (Rhodamine)

PAVLOVA, N.N.; BLYUM, I.A.

Extraction-photometric determination of tantalum with butyl-  
rhodamine B and rhodamine 6G. Zav.lab. 28 no.11:1305-1311 '62.  
(MIRA 15:11)

1. Tsentral'naya laboratoriya geologorazvedochnogo tresta No.1.  
(Tantalum--Analysis) (Rhodamine)



BLYUM, I.A.

"Methods of the chemical analysis of phosphate ores" by  
V.A.Oknina. Reviewed by I.A.Blium. Zav.lab. 29 no.1:100 '63.  
(MIRA 16:2)

(Phosphate ores) (Oknina, V.A.)

BLYUM, I.A.; PAVLOVA, N.N.

Extraction-photometric methods of analysis with the use of basic  
dyes; a survey. Zav.lab. 29 no.12:1407-1418 63. (MIRA 17:1)

BLYUM, I.A.; PAVLOVA, N.N.

Study of the systems metal - anion - basic dye - organic solvent.  
Forms of a dye-reagent and their optical characteristics. Zhur.  
anal. khim. 20 no.9:898-910 '65. (MIRA 18:9)

1. Tsentral'naya laboratoriya prikladnoy geokhimii, Moskva.

BLYUM, M.

5363. Blyum, M. Sportivnoye oruzhiye. M; lzo-vo. DCSAAF, 1954. 120 s. s inn.  
21 sm. 20,000ekz. z r. 45k.---(55-1010) r. 623.44

SO: Knizhnaya Letopis', Vol. 1, 1955

BLYUM, M.B.

"Experience Gained in the Application of Complex Climatology to the Climatic Evaluation of the Cotton-Growing Regions of Uzbekistan,"

SO: "Agrometeorology." NO 3(4), 1949, page 111.

BIYUM, Mikhail Nikolayevich; POZDNYSHY, A.V., redaktor; KARYAKINA, M.S.  
tekhnicheskiy redaktor.

[Firearms for sport] Sportivnoe oruzhie. Moskva, Izd-vo Dosaaf,  
1954, 119 p. (MLRA 8:8)  
(Firearms)

KROYCHUK, L., nauchnyy sotrudnik; BLIUM, O.

Glinker in the "boiling bed." Nauka i zhizn' 27 no.8:63-64  
Ag '60. (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsementnoy  
promyshlennosti (for Kroychuk).  
(Fluidization) (Cement)

KROYCHUK, L.; BLYUM, O.

Techniques of large cement plants. Tekh.mol. 28 no.8:3 '60.  
(MIRA 13:9)

1. Sotrudniki Nauchno-issledovatel'skogo instituta tsementa.  
(Cement plants)



BLYUM, O.; KROYCHUK, L.

Nepheline treasury box. Tekh.mol. 28 no.10:5-6 '60. (MIRA 13:10)

1. Sotrudniki Nauchno-issledovatel'skogo instituta tsemanta.  
(Nepheline)

BLYUM, O.B.

New or little-known lichens from the Caucasus. Ukr.bot.zhur.  
17 no.3:82-84 '60. (MIRA 13:7)

1. Institut botaniki AN USSR, otdel sporovykh rasteniy.  
(Georgia--Lichens)

BLIUM, O.B.

Lichens of Bol'shoy Tokmak District, Zaporozh'ye Province. Ukr. bot.  
zhur. 19 no.3:104-107 '62. (MIRA 15:7)

1. Institut botaniki AN USSR, otdel sporovykh rasteniy.  
(Bol'shoy Tokmak District—Lichens)

BLYUM, O.R.

Absorption of water sufficiently liquid to make drops by fruticose  
and foliose lichens of magic and xeric habitats. Ukr. bot. zhur.  
21 no.6:32-41 '64. (MIRA 18:2)

1. Laboratoriya lishaynikov Instituta botaniki AN UkrSSR.

BLYUM, O.B.

Water economy of lichens; review of literature. Ukr. bot. zhur. 22  
no.2:3-14 '65. (MIRA 18:4)

1. Institut botaniki AN UkrSSR, otdel nizshikh rasteniy.

VYKHOVANETS, V.V.; LIPOVICH, V.G.; KNUTOV, V.I.; CHENETS, V.V.; BLYUM, O.I.;  
KALECHITS, I.V.

Syntheses of methylcyclohexanes labeled with carbon- $C^{14}$  in  
positions 1,2,3,4, and 7. Zhur.VKHO 10 no.4:465-466 '65.  
(MIRA 18:11)

1. Institut nefte- i uglekhimicheskogo sinteza.

BLYUM, O.O.

Loads on tension platform rope guides. Shakht.stroi. no. 3:16-18  
Nr '59. (MIRA 12:4)

1. Kombinat Karagandashakhtostroy.  
(Shaft sinking)

BLYUM, V.

Creative initiative of the masses is an invincible force. Sov.  
profsoiuzy 16 no.14:19-21 J1 '60. (MIRA 13:8)

1. Predsedatel' Latviyskogo respublikanskogo soveta profsoyuzov.  
(Socialist competition)  
(Technological innovations)



BLYUM, V.

Success of one is a challenge for others. Sov. profsoiuzy 18  
no.18:22-24 S '62. (MIRA 15:9)

1. Predsedatel' Latviyskogo respublikanskogo soveta professional'nykh  
soyuzov.

(Latvia—Technological innovations)

(Latvia—Trade unions)

~~BIYUM~~ V.G.

Remote control in an a.c. electrified district; servicing of traction substations with attendant on duty stationed at home. Elek. i tepl. tiaga 7 no.3:16-17 Mr '63. (MIRA 16:6)

1. Starshiy elektromekhanik po avtomatike i teleupravleniyu Begotol'skogo uchastka energosnabzheniya Vestochno-Sibirskoy dorogi.

(Electric railroads--Substations)  
(Remote control)

AUTHORS: Klistorner, A.I., Tverskoy, M.A. and Blyum, V.K. SOV/127-58-12-20/26

TITLE: The Attachment of the Supporting Axle of the Excavator SE-3  
(Rekonstruktsiya krepleniya napornoy osi ekskavatora SE-3)

PERIODICAL: Gornyy zhurnal, 1958, Nr 12, pp 62 - 63 (USSR)

ABSTRACT: The author proposes a new method of fixing the supporting axle of the excavator SE-3, constructed by the Ural'skiy zavod tyazhëlogo mashino-stroyeniya (the Ural Plant of Heavy Machine Building). By changing the shape of the thrust shaft to which this axle is attached breakage can be prevented. There are 2 sets of diagrams.

ASSOCIATION: Magnitogorskiy metallurgicheskiy Kombinat (Magnitogorsk Metallurgical Combine)

Card 1/1

BLYUM, Ye.O.

PHASE I BOOK EXPLOITATION

SOV/4090

p. 2  
Minsk. Belorusskiy politekhnicheskiy institut

Sbornik nauchnykh trudov, vyp. 79 (Collected Scientific Papers of the Belorussian Polytechnical Institute, no. 79) Minsk, Red.-izd. otдел BPI imeni I.V. Stalina, 1959. 94 p. 1,200 copies printed.

Additional Sponsoring Agency: Minsk. Belorusskiy politekhnicheskiy institut.  
Kafedra "Detali mashin."

Editorial Board: V.N. Treyyer (Resp. Ed.), Doctor of Technical Sciences, Professor; V.I. Butrimovich, Candidate of Technical Sciences, Docent; L.M. Rubenchik, Candidate of Technical Sciences, Docent; and A.I. Zheltonoga, Candidate of Technical Sciences, Docent; Eds.: A.G. Blyum, and N.V. Kapranova; Tech. Ed.: Ye.P. Konchits.

PURPOSE: This collection of articles is intended for scientific and technical personnel in the machine industry.

COVERAGE: The book contains articles on the design, operational properties, and causes of failure of ball bearings. Also discussed is the design of frame and  
Card 1/3

Collected Scientific Papers (Cont.)

SOV/4090

housing-type parts for machinery. No personalities are mentioned. References accompany several of the articles.

TABLE OF CONTENTS:

Treyer, V.N. Methods of Designing Ball Bearings

The author discusses determination of design stresses, distribution of radial load among balls, determination of carrying capacity of single-row bearings under static radial load, and design of single-row bearings for long life. 3

Khoteyeva, R.D. Investigation of Changes in Roughness and Microhardness of Inner-Ring Grooves of Ball Bearings During Running-in

The author describes the methods and instruments used in this investigation. Diagrams of changes in roughness and microhardness and micro-slides of ball-bearing races are presented. The results of the tests are summarized at the end of the article. 18

Blyum, Ye.O. Analysis of Causes of Ball-Bearing Failure

The author discusses defects resulting from the inappropriate choice of ball bearings for a given type of work, from improper construction and mounting, from nonuniform load distribution among running elements, from improper lubrication, and from materials used, temperature, and manufacture. 30

Card 2/3

Collected Scientific Papers (Cont.)

SOV/4090

39

Krushevskiy, A.Ye. Design of Frame- and Housing-Type Parts  
The author discusses the application of the theory of elasticity to the design of basic machine parts. The determination of the rigidity of machine parts is also discussed. Information is given on the use of Vlasov's variation method for designing thick- and thin-walled three-dimensional constructions. A sample design of the frame of a horizontal broaching machine is presented.

AVAILABLE: Library of Congress

Card 3/3

VK/pw/gmp  
10-27-60

plyum, YE.O.

PHASE I BOOK EXPLOITATION

SOV/4580

Minsk. Belorusskiy politekhnicheskii institut

Detali mashin (Machine Parts) Minsk, Red.-izd. ot del BPI imeni I.V. Stalina, 1959.  
69 p. (Series: Its: Sbornik nauchnykh trudov, vyp. 75) 1,500 copies printed.

Sponsoring Agencies: Ministerstvo vysshego, srednego spetsial'nogo i professional'nogo obrazovaniya BSSR; Belorusskiy politekhnicheskii institut imeni I.V. Stalina.

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Technical Sciences, Docent; Resp. Ed. for this vol.: A.A. Mukhin, Engineer;  
Ed.: N. Kapranova; Tech. Ed.: Ye. Konchits.

PURPOSE: This collection of articles is intended for technical personnel and  
scientific workers.

COVERAGE: This is the 75th issue of a series published by the Belorussian Poly-  
technic Institute imeni I.V. Stalin. The collection contains eleven articles,

~~Card 1/4~~

SOV/4580

Machine Parts

ten of which are devoted to studies and work related to the life of certain machine parts. The remaining article deals with the power of the lighting installation in a cinematographic apparatus. No personalities are mentioned. References accompany most of the articles. There are 32 references: 30 Soviet, 1 English and 1 German. A short appendix is also included.

TABLE OF CONTENTS:

1. Treyyer, V.N. Short-Time Testing Methods for Determining the Life of Machine Parts	3
2. Krushevskiy, A. Ye. On the Problem of the Calculation of Frame-Type Machine Parts	10
3. Khoteyeva, R.D. The Investigation of Changes in the Smoothness of Surfaces of Ball-Bearing Grooves During Operation	15
4. <u>Blyum, Ye. O.</u> On the Problem of Calculating the Balancing of Piston Engines and on the Prevention of Dangerous Vibrations of Foundations and Shafts With Adjoining Elements	26

Card 2/4



80V/4580

Machine Parts

5. Butrimovich, V.I. Some Problems in the Calculation and Production of Variable-Pitch Screws 37
6. Zheltonoga, A.I. On Methods of Calculating the Life of Bevel Gears in Differentials of Automobiles and Trucks 42
7. Blyum, Ye. O. Use of "Lignofol" [Birch-Veneer Laminate Impregnated With Resol-Type Phenol-Formaldehyde Resin] for Bushings of Sliding Bearings 48
8. Zheltonoga, A.I. Use of Gear-Tooth Gage for Measuring the Amount of Bevel-Gear Tooth Wear 52
9. Getsevich, E.G. Experiments for the Determination of [the Amount of Mechanical] Work Required for the Wear 55
10. Treyyer, V.N. Selection of Allowable Stresses in Machine Parts Under Alternating Loading, Taking Into Account the Variations in Length of Service 61

Card-5/4

S/123/61/000/003/003/023  
A004/A104

AUTHOR: Blyum, Ye. O.

TITLE: Analyzing the causes of ball-bearing breakdown

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1961, 30, abstract 3A244. ("Sb. nauchn. tr. Belorussk. Politekhn. in-t", v. 79, 1959, 30-38)

TEXT: The author investigates the characteristic damages arising during the service time of radial ball bearings and determines the causes of their breakdown. Based on statistical data it was found that more than 50% of ball-bearing breakdowns occurred due to a destruction of the separators which emphasizes the necessity of studying in detail the kinematics of ball-bearing elements and the forces acting on the separator.

V. Pastukhov

[Abstractor's note: Complete translation]

Card 1/1

BLYUM, Ye.O. [Blium, I.A.A.]

Analysis of the motion of rolling bodies in the interrace space of  
a ball bearing taking into consideration the deformation of its parts  
caused by loading. Vestsi AN BSSR. Ser. fiz.-tekh. nav. no.4:103-110  
'62. (MIRA 18:4)

SOV/64-58-5-18/21

AUTHOR:

Blyumber, Ya. B.

TITLE:

Scientific Conferences of the Member States of the Council of Mutual Economic Aid (Nauchnyye soveshchaniya stran-uchastnits Soveta Ekonomicheskoy Vzaïmopomoshchi) The First Conference of the Working Team on Mineral Fertilizers (Pervoye soveshchaniye rabochey gruppy po mineral'nyim udobreniyam)

PERIODICAL:

Khimicheskaya promyshlennost', 1958, Nr 5, pp. 322 - 322 (USSR)

ABSTRACT:

In agreement with the decision made by the Permanent Commission for Economic and Scientific Collaboration in the Field of Chemical Industry the conference took place during May 12-21, a.c. It was attended by delegations from the following countries: the Bulgarian People's Republic, the Hungarian People's Republic, the German Democratic Republic, the Polish People's Republic, the Roumanian People's Republic, the Czechoslovakian Republic and the USSR, as well as by observers from the Chinese People's Republic and the Korean People's Republic. At the conference the demand for mineral fertilizers, an extension of the production of these fertilizers and the carrying out of scientific research work in this field in the member states of the CMEA (Council of Mutual Economic Aid)

Card 1/3

Scientific Conferences of the Member States of the  
Council of Mutual Economic Aid. The First Conference of the Working Team  
on Mineral Fertilizers

SOV/64-58-5-18/21

(Soviet Ekonomicheskoy Vzaimopomoshchi) were discussed. The different production developments in the single member states are mentioned according in order, and it was recommended to offer mutual aid in raw material supplies as well as equipment and building materials for the construction of new and the modernization of existing factories for mineral fertilizer production. To improve the exchange of information and to secure cooperation in the work of scientific experimental production and projection organizations of the member states the latter have to submit short reports every year (by February 1, and August 1) which deal with the course of the fulfilment of the standards fixed by the coordination plan. This report is also to cover their new working projects.

Card 2/3

SOV/64-58-5-18/21  
Scientific Conferences of the Member States of the  
Council of Mutual Economic Aid. The First Conference of the Working Team  
on Mineral Fertilizers

1. Fertilizers--Production

Card 3/3

AKINFIN, G.M.; BLYUMBERG, A.Zh.

Experimental prosthesis of the pleural cavity with synthetic materials following pulmonary resection in dogs. Eksper. khir. i anest. 9 no.1: (MIRA 17:12)  
23-26 Ja-F '64.

1. Institut eksperimental'noy biologii i meditsiny (dir. - prof. Ye.N. Meshalkin) Sibirskogo otdeleniya AN SSSR, Novosibirsk.

BLYUMBERG, A.Zh.

Histological characteristics of the epithelial lining of the anal regions in rats. Dokl.AN SSSR 105 no.3:577-579 N '55. (MLRA 9:3)

1. Voenno-meditsinskaya akademiya imeni S.M. Kirova. Predstavleno akademikom Ye.N. Pavlovskim.  
(Anus) (Epithelium)



BLYUMBERG, A.Zh.

Experimental histological research on the epithelium in the anal region of rats. Biul.eksp.biol.med. 42 no.6:70-73 Je '56. (MLRA 9:9)

1. Iz Voenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova Predstavlena deystvitel'nyy chlenom AMN SSSR N.G.Khlopinyu.

(ANUS, anat. and histol.

regeneration processes in epithelium in rats)

(EPITHELIUM, anat. and histol.

regen. processes in anal region in rats)

(REGENERATION

processes in anal epithelium in rats)

100 and 41m (CP131)

2

CH  
BLYUMBERG, J. A.

Thermal reactions of acetylene. II. The explosive decomposition of acetylene. G. A. Blyumberg and D. A. Frank-Kamenetskii (Inst. Chem. Phys., Acad. Sci. U.S.S.R., Moscow). *J. Phys. Chem. (U.S.S.R.)* 20, 1301-17 (1946) (in Russian); cf. *C.A.* 39, 3195. The pressure  $p$  of  $C_2H_2$  decreases during the course of one expt. according to the equation  $(p_0 - p)/(2p - p_0) = k p_0 t$ ,  $p_0$  being the original pressure,  $t$  time,  $\tau$  the induction time, and  $k$  a const. The value of  $\tau$  is a few sec. The energy of activation calcd. from the variation of  $k$  between 450° and 600° is 39,900 cal. per mole. The above equation is valid until over 50% of  $C_2H_2$  has polymerized to a gaseous product. Later, a solid polymerization product forms, and the dn p of  $p$  is more rapid. The explosion limits of  $C_2H_2$  were detd. between 574° and 872° in horizontal and vertical cylinders and in spheres. The explosion has thermal nature, gives C and H, but less also some  $C_2H_2$  intact. It is assumed that the first stage of the explosion is formation of a dimer, and from the magnitude of the explosion limit it is concluded that this dimer is either cyclobutadiene or methenylcyclopropene. III. A kinetic theory of the formation of acetylene at the heat decomposition of methane. N. N. Znamenskii and D. A. Frank-Kamenetskii. *Ibid.* 1319-23 (in Russian).—By using Kassel's equation (*C.A.* 26, 5797) for the rate of formation of  $C_2H_2$  from  $CH_4$ , and the equation of F.-K. (*C.A.* 39, 3195) for the rate of decompn. of  $C_2H_2$ , the conditions (temp. and pressure) giving highest yields of  $C_2H_2$  are detd. The yield should be greater the higher the temp. (1000-1800°) and the smaller the pressure (70-700 mm. Hg). The best duration of the reaction should be smaller, the higher are the temp. and the pressure. J. J. B.

COMMON ELEMENTS

COMMON VARIABLE MODELS

OPEN

MATERIALS INDEX

ASTM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SYNDICATE

1000000 HAP ONV 001

SELECTIONS

FROM DOMINANT

SELECTION ONE ONV 151

1000000 HAP ONV 001

SELECTIONS

FROM DOMINANT

SELECTION ONE ONV 151

28

117 AND 118 ORDER) PROCESSES AND PROPERTIES INDEX

BLYUMBERG, E. A.

B

COMMON ELEMENTS

COMMON VARIABLE INDEX

Thermal Reactions of Acetylene. IV. Nature of the Induction Period. (In Russian.) E. A. Blyumberg and D. A. Frank-Kamenetskii. Zhurnal Fizicheskoi Khimii (Journal of Physical Chemistry), v. 21, Nov. 1947, p. 1289-1292.

Attempts to show experimentally that the induction period in heat polymerization of acetylene is connected with the accumulation in the reaction system of certain unstable intermediates, probably free radicals.

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

SECTION 8

SECTION 9

SECTION 10

SECTION 11

SECTION 12

SECTION 13

SECTION 14

SECTION 15

SECTION 16

SECTION 17

SECTION 18

SECTION 19

SECTION 20

SECTION 21

SECTION 22

SECTION 23

SECTION 24

SECTION 25

SECTION 26

SECTION 27

SECTION 28

SECTION 29

SECTION 30

SECTION 31

SECTION 32

SECTION 33

SECTION 34

SECTION 35

SECTION 36

SECTION 37

SECTION 38

SECTION 39

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SECTION 41

SECTION 42

SECTION 43

SECTION 44

SECTION 45

SECTION 46

SECTION 47

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SECTION 49

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SECTION 54

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SECTION 62

SECTION 63

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SECTION 65

SECTION 66

SECTION 67

SECTION 68

SECTION 69

SECTION 70

SECTION 71

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SECTION 75

SECTION 76

SECTION 77

SECTION 78

SECTION 79

SECTION 80

SECTION 81

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SECTION 86

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SECTION 90

SECTION 91

SECTION 92

SECTION 93

SECTION 94

SECTION 95

SECTION 96

SECTION 97

SECTION 98

SECTION 99

SECTION 100

SECTION 101

SECTION 102

SECTION 103

SECTION 104

SECTION 105

SECTION 106

SECTION 107

SECTION 108

SECTION 109

SECTION 110

SECTION 111

SECTION 112

SECTION 113

SECTION 114

SECTION 115

SECTION 116

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SECTION 119

SECTION 120

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SECTION 124

SECTION 125

SECTION 126

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SECTION 131

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SECTION 142

SECTION 143

SECTION 144

SECTION 145

SECTION 146

SECTION 147

SECTION 148

SECTION 149

SECTION 150

SECTION 151

SECTION 152

SECTION 153

SECTION 154

SECTION 155

SECTION 156

SECTION 157

SECTION 158

SECTION 159

SECTION 160

SECTION 161

SECTION 162

SECTION 163

SECTION 164

SECTION 165

SECTION 166

SECTION 167

SECTION 168

SECTION 169

SECTION 170

SECTION 171

SECTION 172

SECTION 173

SECTION 174

SECTION 175

SECTION 176

SECTION 177

SECTION 178

SECTION 179

SECTION 180

SECTION 181

SECTION 182

SECTION 183

SECTION 184

SECTION 185

SECTION 186

SECTION 187

SECTION 188

SECTION 189

SECTION 190

SECTION 191

SECTION 192

SECTION 193

SECTION 194

SECTION 195

SECTION 196

SECTION 197

SECTION 198

SECTION 199

SECTION 200

SECTION 201

SECTION 202

SECTION 203

SECTION 204

SECTION 205

SECTION 206

SECTION 207

SECTION 208

SECTION 209

SECTION 210

SECTION 211

SECTION 212

SECTION 213

SECTION 214

SECTION 215

SECTION 216

SECTION 217

SECTION 218

SECTION 219

SECTION 220

SECTION 221

SECTION 222

SECTION 223

SECTION 224

SECTION 225

SECTION 226

SECTION 227

SECTION 228

SECTION 229

SECTION 230

SECTION 231

SECTION 232

SECTION 233

SECTION 234

SECTION 235

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SECTION 237

SECTION 238

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SECTION 240

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SECTION 242

SECTION 243

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SECTION 246

SECTION 247

SECTION 248

SECTION 249

SECTION 250

SECTION 251

SECTION 252

SECTION 253

SECTION 254

SECTION 255

SECTION 256

SECTION 257

SECTION 258

SECTION 259

SECTION 260

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SECTION 262

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SECTION 264

SECTION 265

SECTION 266

SECTION 267

SECTION 268

SECTION 269

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SECTION 271

SECTION 272

SECTION 273

SECTION 274

SECTION 275

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SECTION 281

SECTION 282

SECTION 283

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SECTION 287

SECTION 288

SECTION 289

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SECTION 292

SECTION 293

SECTION 294

SECTION 295

SECTION 296

SECTION 297

SECTION 298

SECTION 299

SECTION 300

SECTION 301

SECTION 302

SECTION 303

SECTION 304

SECTION 305

SECTION 306

SECTION 307

SECTION 308

SECTION 309

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SECTION 311

SECTION 312

SECTION 313

SECTION 314

SECTION 315

SECTION 316

SECTION 317

SECTION 318

SECTION 319

SECTION 320

SECTION 321

SECTION 322

SECTION 323

SECTION 324

SECTION 325

SECTION 326

SECTION 327

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SECTION 330

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SECTION 333

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SECTION 336

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SECTION 338

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SECTION 349

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SECTION 354

SECTION 355

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SECTION 357

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SECTION 360

SECTION 361

SECTION 362

SECTION 363

SECTION 364

SECTION 365

SECTION 366

SECTION 367

SECTION 368

SECTION 369

SECTION 370

SECTION 371

SECTION 372

SECTION 373

SECTION 374

SECTION 375

SECTION 376

SECTION 377

SECTION 378

SECTION 379

SECTION 380

SECTION 381

SECTION 382

SECTION 383

SECTION 384

SECTION 385

SECTION 386

SECTION 387

SECTION 388

SECTION 389

SECTION 390

SECTION 391

SECTION 392

SECTION 393

SECTION 394

SECTION 395

SECTION 396

SECTION 397

SECTION 398

SECTION 399

SECTION 40

BLYUMBERG, E. A.

CH ✓ Polarographic determination of ethyl nitrate and nitrite in aqueous solutions. E. A. Blyumberg and V. L. Pikaeva. (Inst. Chem. Phys., Moscow, *Dokl. Akad. Nauk SSSR*, 10, 310-14 (1963).) The reduction of  $\text{EtNO}_2$  and  $\text{EtNO}$  on a dropping Hg electrode was studied in  $\text{LiOH}$ ,  $\text{LiCl}$ , and  $\text{HCl}$ . Dissolved  $\text{O}$  was removed separately from the electrolyte and the analyzed soln. The 2 were kept separate under  $\text{H}$  and combined just before analysis. The half-wave potential of  $\text{EtNO}_2$  was  $-0.96$  and of  $\text{EtNO}$ ,  $-0.70$  v. The  $E_{1/2}$  were insignificantly affected by the pH but in acid medium the reduction potential of  $\text{H}^+$  in the presence of  $\text{EtNO}_2$  or  $\text{EtNO}$  shifted toward smaller neg. values and the polarograms of the Et compds. merged with that of  $\text{H}^+$ . When present together  $\text{EtNO}_2$  and  $\text{EtNO}$  gave one polarogram; they could be sepd. but unsatisfactorily.  $\text{EtOH}$  when present caused a shift in  $E_{1/2}$  in the presence of  $\text{Et}_2\text{O}$  the shift was more pronounced. Ligroine had no effect.  $\text{EtNO}_2$  did not affect the potential of  $\text{MeCHO}$  (cf. Gray and Style, *C.A.* 47, 7327c), nor did  $\text{EtNO}$ ; however, in its presence the reduction potential of  $\text{Li}^+$  shifted and the polarograms of  $\text{Li}$  and  $\text{MeCHO}$  merged. Procedure for the polarographic detn. of  $\text{EtNO}_2$  and  $\text{EtNO}$  are given.

M. Hosh

①

*St. Petersburg, Fla.*

*6*

...and between the point of ...  
...on the surface of the ...

Blyumberg, F. H.

*Engl.*  
*Chem.* The concentration limits for propagation of a flame in mixtures of hydrogen with the nitrogen oxides. F. A. Blyumberg, A. N. Pomanskii, and N. M. Emanuel. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1956, 770-88 (English translation). — See *C.A.* 51, 4103f. *B. M. R.*

*Blyumberg, E. A.*

Category: USSR

B-9

Abs Jour: Zh--Kh, No 3, 1957, 7547

Author : Blyumberg, E. A., Pomanskiy, A. N., and Emanuel, N. M.

Inst : Academy of Sciences USSR

Title : Concentration Limits for Flame Propagation in Mixtures of Hydrogen and Oxides of Nitrogen

Orig Pub: Izv. AN SSSR, Section on Chemical Sciences, 1956, No 7, 764-770

Abstract: The region of flame propagation in mixtures of  $H_2$  and oxides of  $N_2$  and  $N_2$  has been determined and is presented graphically; the mixtures were ignited by a spark. The lower concentration limit (percent  $H_2$ , first number) and the amount of  $N_2$  (percent in mixture) required to render the mixture completely insensitive were found to be as follows: for  $N_2O$ , 5.0, 86.0, 75.0; for  $NO$ , 11.4, 60.0, 40.0; for an equilibrium mixture  $2NO_2 \rightleftharpoons N_2O_4$ , 24.0, 87.6, 60.0. The region of flame propagation in mixtures of  $H_2$ - $N_2O$ - $NO$  has also been determined.

Card : 1/1 *Inst. chem. phys. as. USSR* -12-

BLUMBERG, E. A.

7  
The oxidation of paraffins initiated by nitrogen dioxide.  
E. A. Blumberg and N. M. Emanuel. *Izv. Akad. Nauk  
S.S.S.R., Otdel. Khim. Nauk* 1957, 274-83. -- The oxidation  
of paraffins by the O of the air was studied. The addn. of  
NO<sub>2</sub> during the initial stages of the reaction made it possible  
to shorten the induction period of the oxidation reaction.  
The induction period could be decreased from 300 to 10 hrs.  
by means of a 30-min. initiation with air contg. 0.38% NO<sub>2</sub>.  
Larger addns. of NO<sub>2</sub> have a neg. effect, bringing about a  
decrease in the yield of acids. The continuous addn. of  
NO<sub>2</sub> appears to prevent the formation of acids. The H<sub>2</sub>O  
which is formed in the reaction has an inhibiting action on  
the acid yield and increases the induction period.  
J. Rouss-Lesch

Inst. Chem. Physics, Acad. Sci. USSR



20-119-6-37/56

AUTHORS: Emanuel', N. M., Blyumberg, E. A., Ziv, D. M., Pikayeva, V.L.

TITLE: The Initiating Effect of the Radiation of Radon in the Process of the Oxydation of Isodecane (2,7-Dimethyloctane)(Initsiiruyushcheye deystviye izlucheniya radona v protsesse okisleniya izodekana (2,7-dimetiloktana)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 119, Nr 6, pp. 1183 - 1186 (USSR)

ABSTRACT: The application of the radiations of radioactive gases for the initiation of chain reactions can be very effective and this not only in slow chain reactions in the liquid phase. Besides, the application of radioactive gases allows interesting experiments with chain reactions in the gaseous phase. This work uses as test object the oxidation of isodecane (2,7-dimethyloctane) on the action of  $\alpha$ -particles of radon. The authors started from the fact that the processes of the oxidation of the hydrocarbons in the liquid phase represent degenerate-branched chain reactions. Therefore such processes can be stimulated only in the initial period in the development of the process. The

Card 1/3

The Initiating Effect of the Radiation of Radon in the Process of the Oxidation of Isodecane(2,7-Dimethyloctane) 20-119-6-37/56

action of radon radiation leads to the occurring of active particles (free radicals and atoms), i. e. to the increase of the initial velocity of the production of the chains  $w_0$ . The experiments were made in a glass device with oxidation cell. The device and the performance of the experiments are illustrated by a figure. 2 diagrams illustrate the curves for the accumulation of the peroxides and acids in the oxidation of isodecane, initiated by  $\alpha$ -radiation of radon (and also by the  $\alpha$ - and  $\beta$ -radiation of the decay products of Rn). The short stimulating action of the radon radiation is enough for a considerable decrease of the induction period in the production of the hydro-peroxides. Also the maximum yield of the peroxide compounds is increased. The very strong increase of the production velocity of the active centers must lead to a considerable diminution of the induction period, which also experimentally is observed. Still more effective is the action of the  $\alpha$ -radiation of Rn upon the reaction velocity after the end of the induction period. The authors thank V. M. Vdovenko for his inter-

Card 2/3

The Initiating Effect of the Radiation of Radon in the Process of the Oxidation of Isodecane (2,7-Dimethyloctane) 20-119-6-37/56

est in this work and V. M. Permyakov and his collaborators for the production of the radon preparations used in this work. There are 3 figures and 3 references, 3 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics AS USSR); Radiyevyy institut Akademii nauk SSSR (Radium Institute AS USSR)

PRESENTED: December 28, 1957, by V. N. Kondrat'yev, Member, Academy of Sciences, USSR

SUBMITTED: December 25, 1957

Card 3/3

Abundantly bank upon.  
 I am not a doctor.  
 Institute of  
 10/1/66

Paris Loyalty Security Agreement

*M.: B. N. Maslov.*

**SOURCE:** This collection of articles is intended for chemists interested in hydrocarbon oxidation reactions, particularly in the area of even fuels.

**CONTENTS:** This collection of 35 articles represents the results of investigations carried out over a period of several years on problems of hydrocarbon oxidation. The authors present their own theoretical and experimental data and also refer to the current literature. No personalities are mentioned. The most interesting part of the articles.

Dr. J. H. B. S. and Dr. V. G. S. [Institute of Medicine, University of California, Berkeley]  
[Institute of Medicine, University of California, Berkeley]

The authors show that oxidation inhibitors are not effective when they oxidize faster than the compounds being oxidized. Optimum inhibiting effect occurs in the initial reaction stages when the concentrations of inhibitors are comparable with concentrations of free radicals and peroxides.

Barvin, I. V., L. G. Pavlovskaya, and Z. A. Maslova [Moscow State University Journal of Chemistry]. Using the Impregnation Method to Study Intermediate Reactions of Fatty Acids and Esters in the Hydrogenation of Olefins. *Chem. Abstr.* 1964, 59:12294a.

The authors have synthesized adipic and stearic acids with the carboxyl radicals tagged with  $C^{14}$ . It is shown that the main portion of esters formed during peroxidation are not products of direct esterification of acids by the alcohols formed during oxidation, but are formed by the decomposition and recombining of free radicals from ketone  $\alpha$ -hydroperoxides.

Silverstein, V. H., and H. K. Knaul, "Infrared of Chemical Physics".  
Mechanism of the Optical Sensitization of Liquid-Phase Oxidation by  
Molecular Oxidation of 2, 7-Dimethyl-2-octene. The combined effect.

examined effects of photochemical activities and the catalytic action of polyvalent metal (Cu and Fe) *trans*-on the oxidation of 2,7-dimethylfluorene are investigated. Additions of metal salts play the role of photoinitiators. The authors suggest reaction mechanism caused by the photolysis of Cu<sup>2+</sup> and Fe *trans*, and confirm the formation of free radicals which cause free radical polymerization.

[illegible]

Knudsen, E. A., E. K. Myers, and E. M. Riedinger. (Institute of Chemical Physics). Liquid-Phase Oxidation of *n*-Butane at Near-Critical Temperatures and Pressures.

The authors discuss the kinetics and chemistry of a purportedly new action for liquid-phase oxidation of *n*-butane. Initiating the reaction with  $\text{K}_2\text{O}$  and carrying with  $\text{CO}_2$  resulted in a shorter induction period but increasing the initial rate of chain growth. Acetic acid and methyl ethylketone are the principal products of the reaction.

Marini, Z. L., L. G. Privitera, and M. M. Emdin: *Institute of Chemical Physics*. Change in the Mechanism of *n*-Decane Oxidation in the Course of the Reaction.

The authors have used  $C^{14}$ -labeled *n*-decane to investigate changes in the mode of formation and consumption of *n*-decyl hydroperoxides during the oxidation of *n*-decane. The hypothesis that variations in the activities of radicals carrying on chain reactions that variations in the accumulation of oxygen-containing oxidation products in the reacting mixture <sup>are</sup> as a possible explanation of the phenomena.

5(4)  
AUTHORS:

Blyumberg, E. A., Voronkov, V. G., Emanuel', N. M. SOV/62-59-1-4/38

TITLE:

Gaseous Initiation by Ozone During the Process of Paraffin  
Oxidation (Gazovoye initsirovaniye ozonom v protsesse okis-  
leniya parafina)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 1, pp 25 - 29 (USSR)

ABSTRACT:

In the present paper the authors investigated the problem of the applicability of ozone as a gaseous initiator in the oxidation of liquid phases. The method of oxidation described in (Ref 3) has been already applied. The paraffin "Kepsen" was oxidized from brown coal supplied by the German Democratic Republic. Experimental data show a number of particular features which occur in the addition of ozone during the oxidation of liquid hydrocarbons. The kinetic curves of the increase in the acid numbers in paraffin oxidation are presented in (Fig 1). The effect of the stimulation with which the reaction was excited at the beginning may be seen from it. If ozone acts in it for a longer period a very peculiar phenomenon is observed. The reaction is

Card 1/4

Gaseous Initiation by Ozone During the Process of Paraffin SOV/62-59-1-4/38  
Oxidation

accelerated (the period of induction is shortened) while the limiting yield of acids is simultaneously reduced. Similar phenomena were also observed in the application of other stimulants. In this connection the experiments with uninterrupted transition of ozonized air were somewhat startling, for the respective kinetic curve indicates a reaction course with maximum velocity and a very high degree of oxidation. It was assumed that the process of oxidation changes in this case and oxidation is produced no longer by molecular oxygen but by ozone. If molecular oxygen participates in the reaction it is included only in very small quantities. (Fig 2) confirms the conclusion that a strong stimulation of the process causes, apart from its acceleration, a reduction of the transformation degree. Interesting results were obtained (Fig 3) by the application of different temperature conditions during the initial stage and the development of the oxidation process effected by a "shock" at the beginning. It may be seen from it that the kinetic curve of acid numbers does not vary in any case. At present, the paraffin is oxidized by means of the manganese oxide

Card 2/4

Gaseous Initiation by Ozone During the Process of Paraffin SOV/62-59-1-4/38  
Oxidation

catalyst under commercial conditions, whereby the process is very complicated, however. Production is simplified and continuous conditions of oxidation are established by the application of ozone as a gaseous initiator. It must be emphasized that oxidation by ozonized air ensures good quality of the oxidation product which meets the requirements called for synthetic fatty acids. Simultaneously a complete utilization of raw material will be achieved. For comparison some properties of the oxidation products synthesized in the presence of the manganese catalyst on the one hand and by uninterrupted oxidation with ozonized air on the other hand are shown in the table. These data were obtained at the laboratory of the Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (All-Union Scientific Research Institute of Fats) in the Shebekinskiy Kombinat under the supervision of N. K. Man'kovskaya. There are 3 figures, 1 table, and 15 references, 8 of which are Soviet.

Card 3/4

Gaseous Initiation by Ozone During the Process of Paraffin Oxidation SOV/62-59-1-4/38

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)  
Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 29, 1957

Card 4/4



BLYUMBERG, E.A.; ZAIKOV, G.Ye.; MAYZUS, E.K.; EMANUEL', N.M.

Differences in the oxidation mechanisms of ethyl alcohol in  
the liquid and gaseous phases. Dokl.AN SSSR 133 no.1:  
144-147 J1 '60. (MIRA 13:7)

1. Institut khimicheskoy fiziki Akademii nauk SSSR. 2. Chlen-  
korrespondent AN SSSR (for Emanuel').  
(Ethyl alcohol) (Oxidation)

5.4300

88359

S/195/60/001/004/004/015  
B017/B055

AUTHORS:

Elyumberg, E. A., Zaikov, G. Ye., Mayzus, Z. K., Emanuel',  
N. M.

TITLE:

Oxidation of Ethyl Alcohol in the Liquid- and the Gaseous  
Phase Under Comparable Conditions

PERIODICAL:

Kinetika i kataliz, 1960, Vol. 1, No. 4, pp. 510-518

TEXT: The kinetics of ethyl alcohol oxidation in the liquid- and the gaseous phase were investigated at various temperatures and pressures. Oxidation of ethyl alcohol in the liquid phase was carried out at 145-230°C and 52-95 atm. The kinetic curves representing the ethyl alcohol consumption and the enrichment of the reaction-product during liquid-phase oxidation at 52 atm and 145, 200, and 230°C appear in Fig. 1. The reaction rate increases with temperature. The activation energy of ethyl alcohol oxidation in the liquid phase is 10.2 kcal/mole. The reaction products of ethyl alcohol oxidation in the liquid phase at 200°C and 52 atm are tabulated. The main reaction products of oxidation in the liquid phase are acetic acid and ethyl acetate. Fig. 2 shows the

Card 1/3

Oxidation of Ethyl Alcohol in the Liquid- and the Gaseous Phase Under Comparable Conditions

88350

S/195/60/001/004/004/015  
B017/B055

kinetic curves of ethyl alcohol consumption and enrichment of reaction products during oxydation at 230°C and 52, 70, and 95 atm. The corresponding curves for oxidation in the liquid phase at 52 atm and 145 and 200°C over cobalt acetate are shown in Fig. 3. Both the reaction kinetics and the composition of the reaction products in gaseous phase oxidation of ethyl alcohol differ from those in liquid phase oxidation. In gaseous phase oxidation, CO and acetaldehyde are the main reaction products. The kinetic curves of ethyl alcohol consumption and the enrichment of the reaction product during gaseous phase oxidation (200°C, 20 atm) at ethyl alcohol concentrations of  $2.6 \cdot 10^{-3}$  and  $0.54 \cdot 10^{-3}$  mole/cm<sup>3</sup> are represented in Fig. 4. Fig. 5 shows the corresponding curves for temperatures of 200, 230, 250, and 280°C and 20 atm at alcohol concentrations of  $2.6 \cdot 10^{-3}$  mole/cm<sup>3</sup>. The influence of temperature on the gaseous phase oxidation of ethyl alcohol at 200 and 280°C and 200 atm is illustrated in Fig. 5. The CO and CH<sub>4</sub> contents of the reaction products increase with temperature. The activation energy for the oxidation of ethyl alcohol in the gaseous phase is 18 kcal/mole. V. N. Semenov is mentioned. There are 5 figures, 1 table, and 21 references: 7 Soviet, 8 British,

Card 2/3

Oxidation of Ethyl Alcohol in the Liquid- and  
the Gaseous Phase Under Comparable Conditions  
3 US, 1 Italian, 1 Indian, and 1 Swiss.

88359

S/195/60/001/004/004/015  
B017/B055

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical  
Physics of the AS USSR)

SUBMITTED: June 10, 1960

Card 3/3

81728  
S/020/60/133/01/40/070  
B004/B007

5.3200

E. A.

AUTHORS: Blyumberg, E. A., Zaikov, G. Ye., Mayzus, Z. K.,  
Emanuel, N. M., Corresponding Member of the AS USSR

TITLE: The Differences in the Oxidation Mechanism of Ethyl Alcohol  
in the Liquid and in the Gaseous Phase

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 1,  
pp. 144 - 147

TEXT: In the preceding papers (Refs. 1, 2) some of the authors found that the oxidation of n-butane in the liquid state is more advantageous than in the gaseous state. In the liquid state, the reaction develops at lower temperature and at a high rate, it is more selective and such products of an intensive oxidation as are characteristic of the reaction in the gaseous phase lack nearly entirely. N. N. Semenov (Ref. 3) explained this difference by a change in the ratio of two competitive reactions:  
 $RO_2^{\cdot} \rightarrow R'O^{\cdot} + R''OH$  (1) and  $RO_2^{\cdot} + RH \rightarrow RO_2H + R^{\cdot}$  (2). Low pressure and high temperature are intended to promote the course of reaction (1), high pressure and low temperature are expected to promote that of reaction (2). ✓

Card 1/3

The Differences in the Oxidation Mechanism of Ethyl Alcohol in the Liquid and in the Gaseous Phase

81728  
8/020/60/133/01/40/070  
B004/B007

For the purpose of checking this assumption, the authors investigated the oxidation of ethanol in the liquid phase (200°C, 50 atm) and in the same autoclave also the oxidation in the gaseous phase at reduced pressure (20 atm). The results of both reactions are compared in Fig. 1. The following characteristic features for these two reactions were observed.

1) Liquid phase: No induction period, high acetic acid- and ethyl acetate yield, low yield of CO, small quantities of acetic aldehyde, which appears only as an intermediate product. 2) Gaseous phase: Long induction period (10 h), slow course of reaction, little acetic acid and ethyl acetate, much CO, and acetic aldehyde as the main product. Formic acid and peroxide in both cases form in only small quantities, because they are not stable under the experimental conditions selected. The authors discuss these results on the basis of reaction equations. As the concentration of alcohol under the experimental conditions in transition from the liquid to the gaseous phase is reduced only to 1/5, this alone cannot be the cause of such a difference in the course of the reaction. By calculating the ratio  $k_2/k_1$  of the rate constants of the reactions (1) and (2), they find that  $k_2/k_1$  in transition from the liquid to the gaseous phase, does not

Card 2/3

The Differences in the Oxidation Mechanism of  
Ethyl Alcohol in the Liquid and in the Gaseous  
Phase

81728  
S/020/60/133/01/40/070  
B004/B007

change by the five-fold but a thousand-fold. The main factor of the difference in the course of the reaction is therefore not the greater density of the liquid phase, but a specific behavior of the liquid phase, which may be caused either by intermolecular hydrogen bonds or by the reaction of ions lacking in the gaseous phase. There are 1 figure and 4 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute  
of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: March 29, 1960

Card 3/3

BLYUMBERG, E.A.; ZAIKOV, G.Ye.; EMANUEL', N.M.

Gas- and liquid phase oxidation of n-butane. Neftekhimiia  
1 no.2:235-243 Mr.-Ap '61. (MIRA 15:2)

1. Institut khimicheskoy fiziki AN SSSR.  
(Butane)  
(Oxidation)



BLYUMBERG, E.A.; MALIYEVSKIY, A.D.; EMANUEL', N.M.

Critical phenomena observed during the liquid phase oxidation of  
butane in benzene. Dokl. AN SSSR 136 no.5:1130-1132 F '61.  
(MIRA 14:5)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent  
AN SSSR (for Emanuel').

(Butane) (Oxidation)

ELYUMBERG, E.A.; ZAIKOV, G.Ye.; EMANUEL', N.M.

Oxidation of n-butane in ~~the~~ gaseous and liquid phases. Dokl.  
AN SSSR 139 no.1:99-101 JI '61. (MIRA 14:7)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent  
AN SSSR (for Emanuel').  
(Butane) (Oxidation).

NORIKOV, Yu.D.; BLYUMBERG, E.A.

Mechanism of chain propagation reaction in the gas-phase  
oxidation of n. butane. Izv.AN SSSR.Otd.khim.nauk no.8:1357-  
1365 Ag '62. (MIRA 15:8)

1. Institut khimicheskoy fiziki AN SSSR.  
(Butane) (Oxidation)

BLUMBERG, E.A.

EMANUEL, N.M., BLUMBERG, E.A.,

Fluid phase oxidation of low molecular organic compounds for monomer production.

Report presented at the 12th Conference on high molecular weight compounds devoted to monomers, 3-7 April 62

CHIZHOV, Ye.B.; BLYUMBERG, E.A.; GEL'PERIN, N.I.

Purification of acetic acid and the removal of formic acid from it.  
Neftekhimiia 2 no.5:771-775 S-0 '62. (MIRA 16:1)

1. Institut khimicheskoy fiziki AN SSSR.  
(Acetic acid) (Formic acid)

ELYUMBERG, E.A.; NORIKOV, Yu.D.; SMIRNOV, Ye.S.

Using gas-liquid chromatography to analyze the oxidation products  
of certain hydrocarbons. Neftekhimiia 2 no.6:897-900 1962.

(MIRA 17:10)

1. Institut khimicheskoy fiziki AN SSSR.

L 15482-63

EPF(c)/EWT(m)/BDS Pr-4 RM/WW

ACCESSION NR: AP3005450

S/0204/63/003/004/0541/0547

AUTHORS: Blyumberg, E. A.; Maliyevskiy, A. D.; Emanuel', N. M.

TITLE: Effect of solvents upon the mechanism of the liquid phase oxidation of n-butane

SOURCE: Neftekhimiya, v. 3, no. 4, 1963, 541-547

TOPIC TAGS: n-butane liquid phase oxidation, acetic acid, butane, chromatography, paper chromatography, gas-liquid chromatography, methylethylketone, ethylacetate, liquid phase oxidation, n-butane

ABSTRACT: Authors studied the kinetics of oxidation of n-butane in pure form and in a mixture with acetic acid at a temperature of 145°C and 50 atm. in order to determine whether or not the acetic acid affects the composition of oxidation products of n-butane. The analysis of the products was conducted by means of gas-liquid chromatography, paper chromatography, and ordinary chemical methods. It was found that acetic acid is not an inert solvent in liquid phase oxidation of n-butane. It shows a considerable effect on the mecha-

Card 1/2

L 15482-63

ACCESSION NR: AP3005450

nism of reaction. When the oxidation of n-butane is carried out in acetic acid media, the formation of methylethylketone, ethylacetate and other products is not as noticeable as is the case when it is oxidized in benzol solutions or without solvents. The oxidation of pure n-butane is much faster than its oxidation in solutions with acetic acid. An assumption is made that the change of composition of oxidation products of butane in acetic acid is related to the decrease of rate of the chain reaction of n-butylhydroperoxide, which results in the formation of methylethylketone. The use of benzol as a solvent for butane has its limits. The solution attains a critical concentration of benzol at which the butane oxidation process is completely stopped. Orig. art. has: 1 table, and 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki, AN, SSSR (Institute of chemical physics, AN SSSR)

SUBMITTED: 17Aug62

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: CH

NO REF SOV: 011

OTHER: 000

Card 2/2



L 12631-63

EPR/EWP(j)/EPT(c)/EWT(m)/BDS Ps-l/Pc-l/Pr-l RM/LW

ACCESSION NR: AP3002877

S/0020/63/150/005/1066/1068 71

AUTHOR: Blyumberg, E. A.; Buly\*gin, M. G.; Margolis, L. Ya.; Emanuel', N. M. 78

TITLE: Liquid phase oxidation of isobutylene in the presence of heterogeneous catalysts

SOURCE: AN SSSR. Doklady\*, v. 150, no. 5, 1963, 1066-1068

TOPIC TAGS: liquid phase oxidation, isobutylene, heterogeneous catalyst, salt catalyst, hydrocarbon gas oxidation, gaseous phase oxidation

ABSTRACT: The object of this work is to increase the selectivity of the oxidation processes in the liquid phase of hydrocarbon gases by means of utilization of heterogeneous catalysts. An assumption was made that the oxidation of hydrocarbons in the liquid phase does not have a principal difference between the analogous oxidation in the gaseous phase. The experimental product for the oxidation in this study was 99.8% pure isobutylene with an admixture of 0.1% by weight of butylene and 0.1% of saturated C sub 3 - C sub 4 hydrocarbons. The process of oxidation of isobutylene in the absence of catalysts did not take place even after 12 hours following the introduction of oxygen. With the introduction of any of

Cord 1/2

L 12631-63

ACCESSION NR: AP3002877

the salt catalysts such as MnO sub 2, Cr sub 2 O sub 3, CuCr sub 2 O sub 4, MnCr sub 4, V sub 2 O sub 5, CuO, MnCoO sub 4 and Pt on SiO sub 2, the oxidation of isobutylene takes place practically without the induction period. However, a substantial amount of oxygen-containing products are formed. The main products of this reaction are acetone and formic acid as well as traces of other compounds. When testing for the selectivity of these heterogeneous catalysts, it was discovered that these catalysts are only initiators of the oxidation process of isobutylene and do not possess any selectivity of the reaction. Orig. art. has: 1 table and 2 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 20Mar63

DATE ACQ: 15Jul63

ENCL: 00

SUB CODE: 00

NO REF SOV: 007

OTHER: 002

mcs/ss

Card 2/2

BLYUMBERG, E.A.; MALIYEVSKIY, A.D.; EMANUEL', N.M.

Effect of solvents on the mechanism underlying liquid-phase  
oxidation of n-butane. Neftskhimiia 3 no.4:541-547 J1-Ag '63.  
(MIRA 16:11)

1. Institut khimicheskoy fiziki AN SSSR.

BLYUMBERG, E.A.; NORIKOV, Yu.D.; EMANUEL', N.M.

Role of the surface in the chain propagation reaction in the  
liquid phase oxidation of n-butane. Dokl. AN SSSR 151 no.5:  
1127-1130 Ag '63. (MIRA 16:9)

1. Institut khimicheskoy fiziki AN SSSR. 2. Chlen-korrespondent  
AN SSSR (for Emanuel').  
(Butane) (Oxidation) (Chemical reactors)

MALIYEVSKIY, A.D.; BLYUMBERG, E.A.; EMANUEL', N.M.

Critical phenomenon in the liquid-phase oxidation of a methyl-ethyl ketone in a benzene solution. *Neftekhim* 4 no.3:472-476  
My-Je '64.

(MIRA 18:2)

1. Institut khimicheskoy fiziki AN SSSR.

ACCESSION NR: AP4037240

S/0062/64/000/005/0826/0831

AUTHOR: Norikov, Yu. D.; Bobolev, A. V.; Blyumberg, E. A.

TITLE: Effect of the surface on the chain continuation mechanism in gas phase oxidation of n-butane.

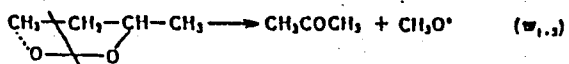
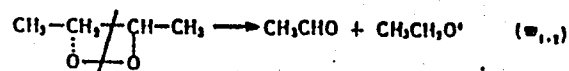
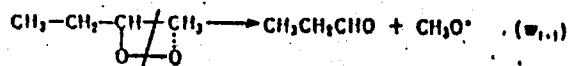
SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 5, 1964, 826-831

TOPIC TAGS: normal butane oxidation, gas phase oxidation, mechanism, kinetics, secondary butyl peroxide radical, isomerization, reactor surface, reactor surface catalytic action, chain continuation

ABSTRACT: The kinetics of the gas phase oxidation of n-butane in stainless steel and in quartz reactor washed with KCl solution (forming a KCl layer of  $5.5 \text{ mg/cm}^2$ ) were studied. The oxidation was conducted at 550 mm Hg, 260C, with a butane:O ratio of 2:1. The rate of the decomposition of the secondary butyl peroxide radical by the three courses was compared:

Card 1/3

ACCESSION NR: AP4037240



These reactions depend strongly on the nature of the reactor surface: the reaction is many times slower in the metal reactor; 3 times as much acetone is formed in the metal or in the KCl-coated reactor as in a quartz reactor; no propionaldehyde is formed in the stainless steel reactor; and the reaction rate in the stainless reactor used for 150 hours is much faster than in the fresh metal reactor. The differences in the ratios of the 3 possible  $\text{RO}_2$  decomposition rates are attributed to the specific catalytic action of the different reactor surfaces on the isomerization of the peroxide radical. The stainless steel and the KCl layer on quartz promote  $\text{RO}_2$  radical isomerization with transition of the free valence from the oxygen atom to the beta-carbon atom and subsequent decomposition

Card 2/3

ACCESSION NR: AP4037240

of the radical to form acetone (70% of the radicals proceed via this route; no propionaldehyde was formed). Quartz promotes isomerization with transfer of valency to one of the alpha-carbon atoms to form acetaldehyde and propionaldehyde (only 20% of the radicals form acetone). Orig. art. has: 1 table, 3 figures and 5 equations.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 13Sep63

ENCL: 00

SUB CODE: OC

NO REF SOV: 010

OTHER: 002

Card 3/3



L 34002-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5006076

S/0204/65/005/001/0053/0007

AUTHOR: Zaikov, G. Ye.; Blyumberg, E. A.; Emanuel', N. M.

TITLE: The inhibitory effect of resinous products on the liquid phase oxidation of n-butane

SOURCE: Neftekhimiya, v. 5, no. 1, 1965, 53-57

TOPIC TAGS: butane oxidation, liquid phase oxidation, hydrocarbon oxidation, oxidation kinetics, resin, methyl ethyl ketone, acetic acid production, ethanol production, acetaldehyde production

ABSTRACT: The autoinhibition of the liquid-phase oxidation of n-butane and of methyl ethyl ketone by resinous products was studied. n-Butane and methyl ethyl ketone were oxidized at 145C and 50 atm. in a stainless steel movable glass lining with or without additions of resinous products in various runs. Addition of resin was shown to increase the rate of oxidation and decrease the maximum conversion of n-butane (see Fig. 1). A similar but weaker effect of residual resins was observed in the oxidation of methyl ethyl ketone. Elemental and spectral analysis of resins obtained from the

Card 1/4

L 34002-65

ACCESSION NR: A25006076

2  
oxidation of n-butane, methyl ethyl ketone or ethanol indicated their similar structure and their formation by condensation of acetaldehyde, the latter being an intermediary oxidation product in the studied processes. The conversion reached in the stainless steel vessel was lower than in the reactor equipped with a glass lining, apparently because the metal promotes formation of acetaldehyde. 7  
Orig. art. has: 3 figures.

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Chemical physics institute, AN SSSR)

SUBMITTED: 25Dec63

ENCL: 02

SUB CODE: 00

NO REF SOV: 014

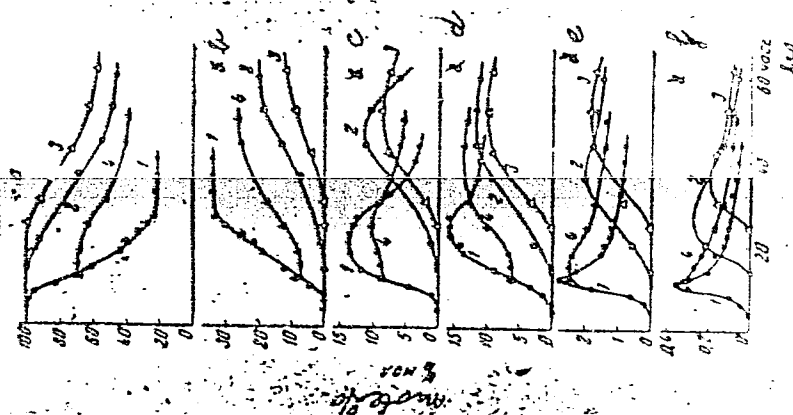
OTHER: 000

Card 2/4

L 34002-65

ACCESSION NR: AP5006076

ENCLOSURE: 01



Card 3/4

L 34002-65

ACCESSION NR: AP5006076

ENCLOSURE: 02

Figure 1. The effect of additions of resin on the kinetics of oxidation of n-butane (145C, 50 atm). Kinetic curves of n-butane consumption and of the accumulation of oxidation products:

1-without addition of resin; 2- 0.9 g resin added at the start of the process; 3-1.8 g resin added at the start of the process; 4-0.9 g resin added 1 hrs after the start of the reaction. a-butane consumption; b-accumulation of acetic acid; c-methyl ethyl ketone; d-ethers; e-alcohols; f-peroxides.

Card 4/4

EMANUEL', Nikolay Markovich; DENISOV, Yevgeniy Timofeyevich;  
MAYZUS, Zinaida Kushelevna. Prinimali uchastie:  
ANTONOVSKIY, V.L.; BLYUMBERG, E.A.; VASIL'YEV, R.F.;  
GAGARINA, A.B.; GOL'DBERG, V.M.; ZAIKOV, G.Ye.; DORIKOV,  
Yu.D.; OBUKHOVA, L.K.; TSEPALOV, V.F.; SHLYAPINTOKH,  
V.Ya.; SKIBIDA, I.P., red.

[Oxidation chain reactions of hydrocarbons in the liquid  
phase] Tsepnye reaktsii okisleniya uglevodorodov v  
zhidkoi faze. Moskva, Nauka, 1965. 374 p. (MIRA 18:8)

1.0126-56 SMT(m) BFP(j) RM  
ACC NR: AP6011656

SOURCE CODE: UR/0020/66/167/003/0579/0582

AUTHOR: Blyumberg, E. A.; Valov, P. I.; Norikov, Yu. D.; Emanuel', N. M.  
(Corresponding member AN SSSR)

2/  
B

ORG: Institute of Chemical Physics, Academy of Sciences, SSSR (Institut khimi heskoy fiziki/  
Akademii nauk SSSR)

TITLE: Co-oxidation of unsaturated hydrocarbons and other organic compounds as a method  
of synthesizing oxides of olefins

SOURCE: AN SSSR. Doklady, v. 167, no. 3, 1966, 579-582

TOPIC TAGS: organic oxide, olefin, aldehyde, methyl ethyl ketone, aromatic hydrocarbon,  
organic synthetic process

ABSTRACT: The report describes in general terms a procedure for direct derivation of olefin  
oxides through the cooxidation of unsaturated hydrocarbons and other organic compounds oxi-  
dizing more readily than the olefin involved. The process utilizes the active oxygen of perox-  
ide radicals and hydroperoxides which comprise the primary intermediate products of oxidation  
of organic compounds. Aldehydes, methylethylketone, and alkylaromatic and paraffin hydro-  
carbons were employed in systems with propylene, isobutylene, and ethylene. Olefin oxides

Card 1/2

UDC: 542.91+541.128.2

ACC NR: AP6032585

SOURCE CODE: UR/0062/66/000/008/1334/1339

AUTHOR: Valov, P. I.; Blyumberg, E. A.; Emanuel', N. M.

ORG: Institute of Chemical Physics, Academy of Sciences, SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Kinetics and mechanism of the combined oxidation of propylene and acetaldehyde

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 8, 1966, 1334-1339

TOPIC TAGS: combustion modifier, oxidation mechanism, free radical, oxidation inhibitor, *oxidation kinetics, acetaldehyde, olefin*

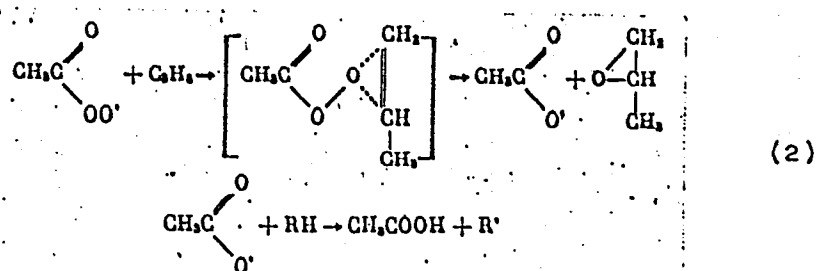
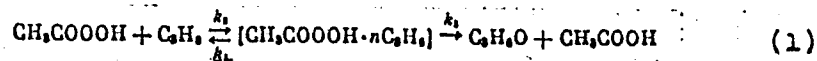
ABSTRACT: A study has been made of the kinetics and mechanism of the combined oxidation of an olefin and an aldehyde. This reaction was previously shown to be a step common to the mechanisms of oxidation of unsaturated hydrocarbons and of the combined oxidation of olefins and organic compounds of various classes. The reagents used were acetaldehyde, propylene, and air. The reaction was carried out in a special stainless steel autoclave at 70—80C and 50 atm. Under these conditions the reaction proceeds in the liquid phase. Reaction products were subjected to chemical and gas-liquid chromatographic analysis. It was

Card 1/4

UDC: 541.124+542.943

ACC NR: AP6032585

found that propylene oxide and acetic acid are the end products of the reaction; propylene glycol monoacetate is formed along with the propylene oxide. This was confirmed by control experiments in which some propylene oxide was added to the initial reagents. A reaction mechanism was postulated for the formation of propylene oxide:



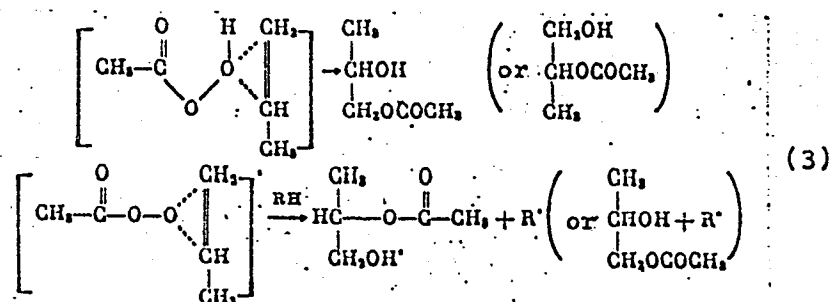
To determine whether reaction (1) or (2) prevails, experiments were carried out in which an inhibitor (ionol) which reacts with free radicals was added to the reaction mixture at the moment corresponding to

Card 2/4



ACC NR: AP6032585

the maximum rate of formation of propylene oxide. On addition of the inhibitor, acetaldehyde consumption and reaction product accumulation virtually ceased; propylene oxide concentration increased only slightly. This indicates that propylene oxide is formed mainly via free radicals (reaction (2)). To determine the contribution of reaction (1), experiments involving the reaction of peracetic acid with propylene were carried out; the rate of formation of propylene oxide was found to be about 15% of its maximum rate of formation in the reaction of interest. It was concluded that the principal epoxidizing agent in the combined oxidation of unsaturated compounds and aldehydes is the acetyl peroxide radical,  $RC(=O)O\cdot$ ; rather than the corresponding peracid. It was also postulated that propylene glycol is formed via the isomerization of the complex intermediates formed in reactions (1) and (2):



Card 3/4

ACC NR: AP6032585

Thus the reactions of formation of propylene oxide and propylene glycol monoacetate represent an alternate course of the chain propagation reaction, which is simultaneous to the reaction  $RO_2 + \text{acetaldehyde}$ . This paper represents P. I. Valov's dissertation. Orig. art. has: 4 figures. [WA-68]

SUB CODE: 07,21/ SUBM DATE: 03Feb66/ ORIG REF: 005/  
OTH REF: 001

Card 4/4

BLYUMBERG, F.M.

SCARLET FEVER

"On the Problem of the Laboratory Diagnostics of Scarlet Fever", by G.N. Khaskina-Minder and F.M. Blyumberg, Nauchnyye Trudy Moskovskogo Instituta Vaktsin i Syvorotok, 1956, 6, pp 151-158 (from Meditssinskiy Referativnyy Zhurnal, Section 1, No 2, 1957, p 79.)

This article deals with the precipitation of urine and nasopharyngeal secretions with serum of scarlatinal convalescents as a reactive method for the early diagnostics of scarlet fever. In this reaction, the authors used the serum as an antibody, (from the 26th to the 40th day of the disease) and the antigen was in the secretion and urine (from the 2nd up to and after the 8th day of the disease). Precipitinogen appears in the pharyngeal secretion and in urine even at the very beginning of scarlet fever, and reaches a maximum concentration on the 4th or 5th day of the disease. Subsequently, precipitinogen is more often detected in urine than in the secretion. It is concluded that specific precipitinogen has been detected in the urine and nasopharyngeal secretion of cases which were previously not diagnosed as being scarlet fever.

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- 70 -

BLYUMBERG, I.B.

"Calculation of Processes of Wet Treatment of Motion Picture Film, " (I.B. Blyumberg).  
Trudy Leningradskogo Kinoizhenerov (Trans Leningrad Inst Mot Pict Eng), no. 2,  
90-98, 1949. (T-2234)

The author gets rather too involved to be of much value to the working engineer.  
We do not know the author.